IN THE CLAIMS

Claims 11-16 are pending in this application. Please amend claims 11-15 and add new claim 16 as follows:

1-10. (Canceled)

11. (Currently Amended) A method for ~~implementing a fast Fourier transformation on~~ processing a data array in a parallel-processing computer ~~comprising~~ having an input apparatus, ~~a processing apparatus that includes~~ a plurality of processors coupled with each other, ~~each employing memories and a network for transferring data among the memories,~~ an output apparatus, and an external storage apparatus, each of the processors having a memory, the method comprising the steps of:

dividing the data array into a plurality of data portions with ~~the processing apparatus~~ at least one of the processors;

storing the plurality of data portions [[in]] into any of said memories ~~employed by the plurality of processors~~;

dividing said plurality of the data portions into ~~a first part and a second part with the processing apparatus~~ a plurality of data parts;

determining whether each of the data parts is a first data part or a second data part based on order of each of the data parts in the data array, said first data part being even-numbered data of said data array in a direction of a second axis and said second data part being odd numbered data of said data array in the direction of said second axis;

carrying out first processing which is Fourier transformation of said first data part along a direction of a first axis with ~~the processing apparatus~~ each processor while transferring the data parts among the processors;

relocating resultS of said first processing among the plurality of processors; and

carrying out second processing which is a Fourier transformation of said second data part along the direction of said first axis with the each processor while transferring the relocated results among the processors.

~~processing apparatus, while relocating a result of said first processing among the plurality of processors;~~

~~performing the Fourier transformation on said relocated data along a direction of a second axis with the processing apparatus;~~

~~wherein~~

~~said first part of said data portions is even-numbered data of said data array in the direction of said second axis and~~

~~said second part of said data portions is odd-numbered data of said data array in the direction of said second axis.~~

12. (Currently Amended) A method according to claim 11, further comprising the step of relocating a result of the Fourier transformation of said second data part along the direction of said first axis among the plurality of processors, in parallel with the step of performing the Fourier transformation of said relocated ~~data~~ results along the direction of the second axis.

13. (Currently Amended) A method according to claim 12, further comprising the steps of:

upon completion of the step of relocating a result of the Fourier transformation of said second data part along the direction of said first axis, carrying out along the direction of said second axis Fourier transformation of the relocated result of the Fourier transformation of said second data part along the direction of said first axis with the ~~processing apparatus~~ processors; and

carrying out a final process of the Fourier transformation of the data array along the direction of said second axis with the ~~processing apparatus~~ processors by using both the result of the Fourier transformation of said second data part along the direction of said second axis and the result of the Fourier transformation on said first data part along the direction of said second axis.

14. (Currently Amended) A method for ~~implementing a three-dimensional fast Fourier transformation of~~ processing a data array related to weather

calculation and composed of three-dimensional data, in a parallel-processing computer ~~comprising~~ having an input apparatus, ~~a processing apparatus that includes~~ a plurality of processors coupled with each other, ~~each employing memories and a network for transferring data among the memories,~~ an output apparatus, and an external storage apparatus, each of the processors having a memory, the method comprising the steps of:

dividing the data array into a plurality of data portions with the ~~processing apparatus~~ the processors, each of the plurality of data portions being laid out on one of planes that are oriented perpendicularly to the direction of a Z axis, and arranged to form a rectangular solid having dimensions of (X, Y, Z) wherein N_X, N_Y, and N_Z are side lengths of said rectangular solid in the directions of X, Y, and Z axes, respectively;

storing the plurality of data portions in said memories employed by the plurality of processors;

determining whether each data element in the data array along the direction of the Y axis has either an odd-numbered data X coordinate or an even-numbered X coordinate;

carrying out transformation processing only of data elements having even-numbered X ~~coordinate~~ coordinates in the data array along the direction of the Y axis with the ~~processing apparatus~~ processors;

carrying out transformation processing only of data elements having odd-numbered X ~~coordinate~~ coordinates in the data array along the direction of the Y axis with the ~~processing apparatus~~ processors, concurrently carrying out transfer processing of the data elements having even-numbered X ~~coordinate~~ coordinates in the data array so that transferred data elements are divided onto each one of planes that are oriented perpendicularly to the direction of the Y axis, and each one of the divided data elements is stored into the memories employed by the plurality of processors;

carrying out first $(\log_2 N_X - 1)$ steps of transformation processing only of the data elements having even-numbered X ~~coordinate~~ coordinates in the data array along the direction of the X axis with the ~~processing apparatus~~ the processors, concurrently carrying out ~~a~~ transfer processing of the data elements having even-numbered X ~~coordinate~~ coordinates in the data array

~~with the processing apparatus~~ so that the transferred data elements are divided onto each of planes that are oriented perpendicularly to the direction of the Y axis and each of the divided data elements is stored into the memories employed by the plurality of processors;

carrying out the first ($\log_2 N_X - 1$) steps of transformation processing only of the data elements having odd-numbered X ~~coordinate~~ coordinates in the data array along the direction of the X axis with the ~~processing apparatus~~ the processors;

carrying out a last step of the transformation processing of the data elements in the data array along the direction of the X axis ~~by the processing apparatus~~ with the processor; and

carrying out transformation processing of the data elements in the data array along the direction of the Z axis with the ~~processing apparatus~~ processors.

15. (Currently Amended) A method for ~~implementing a one-dimensional fast Fourier transformation on~~ processing a data array having N points in a parallel-processing computer ~~comprising~~ having an input apparatus, a processing apparatus that includes a plurality of processors, ~~each employing~~ having one or more memories, ~~and a network for transferring data among the memories,~~ an output apparatus, and an external storage apparatus, each of the processors having a memory, ~~wherein N, N_X, N_Y, and N_Z are integers and a relation $N = N_X \times N_Y \times N_Z$ is satisfied~~, the method comprising the steps of:

dividing the data array into a plurality of data portions with the processors, each of the data portions being laid out on one of planes that are oriented perpendicularly to the direction of a Z axis, and arranged to form a rectangular solid having dimensions of {X, Y, Z} wherein N, N_X, N_Y, and N_Z are integers, N_X, N_Y, and N_Z are side lengths of said rectangular solid in the directions of a X axis, a Y axis, and the Z axis, respectively, and a relation $N = N_X \times N_Y \times N_Z$ is satisfied;

storing the plurality of data portions in said memories employed by the plurality of processors;

determining whether data element in the data array along the direction of the Y axis has an odd-numbered data X coordinate or an even-numbered X coordinate;

carrying out transformation processing and twist-coefficient multiplication processing only of data elements having even-numbered X ~~coordinate~~ coordinates in the data array along the direction of the Y axis with the ~~processing apparatus~~ processors;

carrying out transformation processing and twist-coefficient multiplication processing only of data elements having odd-numbered X ~~coordinate~~ coordinates in the data array along the direction of the Y axis ~~by the processing apparatus~~ with the processors, concurrently carrying out transfer processing of the data elements having even-numbered X ~~coordinate~~ coordinates in the data array ~~with the processing apparatus~~ so that the transferred data elements are divided onto each one of planes that are oriented perpendicularly to the direction of the Y axis, and each one of the divided data elements is stored into the memories employed by the plurality of processors;

carrying out first $(\log_2 N_X - 1)$ steps of transformation processing only of the data elements having even-numbered X ~~coordinate~~ coordinates in the data array along the direction of the X axis ~~with the processing apparatus~~, concurrently carrying out transfer processing of the data elements having even-numbered X ~~coordinate~~ coordinates in the data array with the ~~processing apparatus~~ processors so that the transferred data elements are divided onto each of planes that are oriented perpendicularly to the direction of the Y axis, and each of the divided data elements is stored into the memories employed by the plurality of processors;

carrying out the $(\log_2 N_X - 1)$ steps of the transformation processing only of the data elements having odd-numbered X ~~coordinate~~ coordinates in the data array along the direction of the X axis with the ~~processing apparatus~~ processors;

carrying out a last step of the transformation processing ~~and twist-coefficient multiplication processing~~ of the data elements in the data array

along the direction of the X axis with the ~~processing apparatus~~ processors; and

carrying out transformation processing of the data elements in the data array along the direction of the Z axis with the ~~processing apparatus~~ processors.

16. (New) A computer comprising:

a plurality of processors coupled with each other, each of the processors having a memory;

an input unit coupled with at least one of the processors; and

an output unit coupled with at least one of the processors,

wherein the input unit inputs a data array to at least one of the processors,

at least one of the processors

divides the data array into a plurality of data portions,

stores the data portions to either of the memory,

divides the data portion into a plurality of data parts,

determines whether each of the data parts is either a first data part or a second data part on the basis of order of each of the data parts in the data array, said first data part being even-numbered data of the data array in a direction of a second axis and said second data part of said data portions being odd numbered data of the data array in the direction of said second axis,

carries out first processing which is Fourier transformation of the first data part along a direction of a first axis while transferring the data parts among the processors, relocates a result of the first processing among the processors, and

carries out second processing which is a Fourier transformation of the second part along the direction of the first axis while transferring the relocated results among the processors, and

wherein the output unit outputs a result of the first processing and the second processing.